

WHAT IS CLAIMED IS:

1. A catalyst for producing an α,β -unsaturated carboxylic acid through liquid-phase oxidation of an olefin or an α,β -unsaturated aldehyde, wherein a metal is supported on a carrier with a total pore volume of 0.40 to 1.50 cc/g as measured by nitrogen gas adsorption method.

2. The catalyst for producing an α,β -unsaturated carboxylic acid according to claim 1, wherein the total pore volume of the carrier as measured by nitrogen gas adsorption method is 0.40 to 0.80 cc/g.

3. The catalyst for producing an α,β -unsaturated carboxylic acid according to claim 2, wherein a proportion of the pore volume of the mesopore having a pore size of from 2 nm through 50 nm of the carrier as measured by nitrogen gas adsorption method to the total pore volume of the carrier is 40 % or less.

4. The catalyst for producing an α,β -unsaturated carboxylic acid according to claim 1, wherein the total pore volume of the carrier as measured by nitrogen gas adsorption method is 0.80 to 1.50 cc/g.

5. The catalyst for producing an α,β -unsaturated carboxylic acid according to claim 4, wherein a proportion of the pore volume of the mesopore having a pore size of from 2 nm through 50 nm of the carrier as measured by nitrogen gas adsorption method to the total pore volume of the carrier is 10 % or less.

6. A catalyst for producing an α,β -unsaturated carboxylic acid through liquid-phase oxidation of an olefin or an α,β -unsaturated aldehyde, wherein palladium with an average particle diameter in the range of 1 to 8 nm is supported on a carrier.

7. A method for producing the catalyst for producing an α,β -unsaturated carboxylic acid according to any one of claims 1 to 5, wherein a metal compound is reduced by a reducing agent in the presence of the carrier.

5 8. A method for producing the catalyst for producing an α,β -unsaturated carboxylic acid according to claim 6, wherein a palladium compound is reduced by a reducing agent in the presence of the carrier.

9. A method for producing an α,β -unsaturated carboxylic acid through liquid-phase oxidation of an olefin or an α,β -unsaturated aldehyde with
10 molecular oxygen in the presence of the catalyst for producing an α,β -unsaturated carboxylic acid according to any one of claims 1 to 6.